Hydrological Summary for Great Britain

AUGUST 1993

Rainfall

August was a relatively sunny but cool month with lengthy dry periods in most areas. Most of the rainfall was associated with the passage of frontal systems around the 11th and 21st. Anticyclonic conditions predominated however and although one or two notable thunderstorms were reported (e.g. at Scarborough on the 5th) monthly rainfall totals were generally below average. For Britain as a whole it was the first relatively dry month since March; on a regional basis only Yorkshire exceeded the 1961-90 average and some areas - mostly in southern England - registered less than 40% of normal rainfall. Scotland recorded only its fourth month with below average rainfall since July last year. Despite a distinctly unsettled complexion to the weather in the English lowlands, summer (June-August) rainfall totals were mostly close to the average but generally above average elsewhere. In the 12-month timeframe, regional rainfall totals also exceed the annual mean, by an appreciable margin in much of Scotland. Only a faint echo of drought conditions is now evident - at the regional scale - in the long term rainfall accumulations for England and Wales, the most notable deficiency being for the Southern region.

River Flow

Summer recessions continued during August in most catchments, interrupted in parts of northern England by a few minor spates. As in July, monthly runoff totals - with a few exceptions - were well within the normal range but, northern England apart, a little below average. The influence of catchment geology on summer flows was clearly evident in much of lowland England: runoff from impervious catchments was often substantially below average whereas spring-fed rivers in most areas maintained near-average flows. Important exceptions include a number of East Anglian chalk streams, for example, the Stringside stream, where baseflow remains moderate and only three months have registered above average runoff out of the last 61. Even in such catchments, August flows were generally well above the minima established over the 1989-92 period. Runoff accumulations in the three- to five-year timeframes testify to the remarkable accentuation in the NW/SE runoff gradient across Britain. For example, runoff totals since October 1988 exceed any comparable earlier accumulations on the Clyde and Carron but represent new minima on the Lud and Itchen.

Groundwater

As is normal for the late summer, groundwater levels generally declined through August - a few isolated recoveries in deep wells could be attributed to the belated impact of late spring infiltration. Throughout the greater part of the Chalk, water-tables are close to the seasonal average but a zone of relatively depressed groundwater levels may still be identified in Lincolnshire, Cambridgeshire and Norfolk; importantly, however, the August levels in this area were very substantially greater than the record minima established last year. Less spatial coherence is evident in the August levels for the Permo-Triassic index wells but, again, levels are mostly well within the normal range; isolated anomalously low levels are considered to reflect regional or local groundwater pumping.

General

A modest reduction in reservoir stocks occurred last month but they remain healthy and considerably greater (up to 30% in the lowlands) than at the end of the hydrologically stressed summers of 1989 and 1990. Following significant early autumn rainfall, soil moisture conditions suggest that a normal seasonal recovery in runoff and recharge rates may be anticipated. On a regional basis, the water resources outlook is good.

Institute of Hydrology

British Geological Survey

Data for this report have been provided principally by the regional divisions of the National Rivers Authority* in England and Wales, the River Purification Boards in Scotland and by the Meteorological Office. Reservoir contents information has been supplied by the Water Services Companies, the NRA or, in Scotland, the Lothians Regional Council. The most recent areal rainfall figures are derived from a restricted network of raingauges (particularly in Scotland) and a proportion of the river flow data is of a provisional nature.

A map (Figure 3) is provided to assist in the location of the principal monitoring sites.

* For reasons of consistency the original ten regional divisions of the NRA have been retained for use in the Hydrological Summaries.

13 September 1993

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TABLE 1 1992/93 RAINFALL AS A PERCENTAGE OF THE 1961-90 AVERAGE

		Aug	Sept	Oct	Nov	Dec	Jan 1993	Feb	Mar	Apr	May	Jun	Jul	Aug
England and Wales	mm	129	92	84	138	83	98	15	27	96	86	77	83	58
	%	170	119	99	153	88	111	24	38	160	135	119	134	77
NRA REGIONS														
North West	mm	151	110	121	172	118	152	22	32	116	131	62	101	95
	%	141	96	95	140	95	126	28	34	163	175	77	119	89
Northumbria	mm	99	95	81	100	71	108	17	28	120	118	46	65	79
	%	122	130	107	116	88	129	29	40	214	190	76	99	98
Severn-Trent	mm	120	74	71	113	61	81	10	15	78	84	64	76	51
	%	179	116	111	159	79	116	19	25	142	142	108	144	76
Yorkshire	mm	99	95	77	102	71	84	22	14	102	82	53	72	87
	%	134	140	105	128	86	106	38	21	173	137	88	123	118
Anglian	mm	83	86	73	83	41	57	17	17	71	52	52	68	46
	%	151	176	143	143	75	114	46	36	154	108	101	139	83
Thames	mm	107	93	73	117	58	85	6	23	83	61	54	58	35
	%	184	158	118	180	83	133	13	41	166	109	99	118	61
Southern	mm	104	70	86	141	76	94	9	30	91	58	56	56	37
	%	182	101	108	166	93	118	17	48	172	107	104	116	64
Wessex	mm	129	85	52	152	86	117	7	43	82	62	69	74	33
	%	195	118	66	183	92	134	11	61	155	102	121	143	50
South West	mm%	174	93	96	216	122	171	22	33	98	131	127	129	39
		207	100	83	173	88	124	22	33	142	182	183	188	46
Welsh	mm	222	114	102	214	145	197	23	34	107	124	104	108	73
	%	220	99	74	151	95	138	24	32	134	151	131	140	72
Scotland	mm	221	177	123	212	159	291	67	91	128	132	101	127	87
	%	189	125	79	140	105	193	66	73	168	154	118	135	74
RIVER PURIFICATION BOARDS														
Highland	mm	255	214	155	280	239	358	86	151	86	93	123	122	91
	%	201	125	78	138	121	190	68	93	95	101	125	115	72
North-East	mm	132	107	110	93	78	152	41	55	68	109	69	90	63
	%	152	123	113	94	84	154	63	71	113	158	105	123	72
Tay	mm	201	160	70	163	113	319	32	113	135	132	83	94	73
	%	214	140	54	135	89	222	34	104	218	159	114	122	77
Forth	mm	183	166	66	153	84	247	42	188	108	119	86	81	67
	%	195	151	57	137	76	209	53	194	183	161	125	107	71
Tweed	mm	157	118	77	135	82	158	21	41	124	130	64	66	49
	%	178	133	81	145	88	158	31	52	218	183	99	91	56
Solway	mm	215	155	116	203	133	207	13	103	163	139	74	96	70
	%	181	108	74	141	90	133	13	88	212	164	88	107	59
Clyde	mm	278	205	133	255	165	339	18	161	158	119	94	107	89
	%	207	115	69	142	92	179	15	110	188	131	101	98	67

Note: The most recent monthly rainfall figures correspond to the MORECS areal assessments derived by the Meteorological Office; the provisional figures for England and Wales and for Scotland are derived using a different raingauge network. Regional areal rainfall figures are regularly updated (normally one or two months in arrears) using figures derived from a far denser raingauge network.

TABLE 2 RAINFALL RETURN PERIOD ESTIMATES

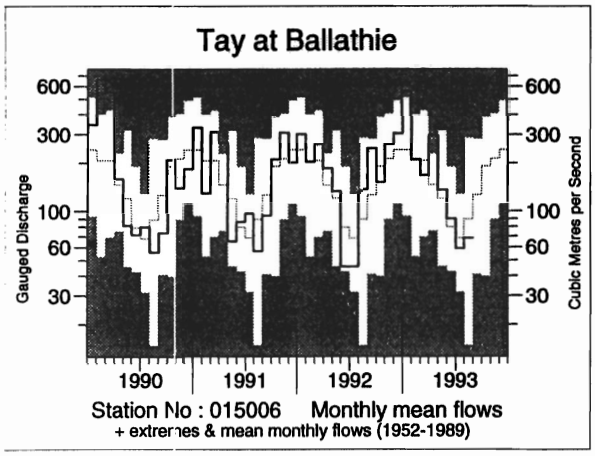
		Jan-Aug93		Sep92-Aug93		Mar90-Aug93		Aug88-Aug93	
		Est Return Period, years		Est Return Period, years		Est Return Period, years		Est Return Period, years	
England and Wales	mm	540		937		2842		4264	
	% LTA	98	2-5	105	2-5	92	5-10	94	5-10
NRA REGIONS									
North West	mm	712		1233		3927		5953	
	% LTA	100	<2	103	2-5	95	2-5	97	2-5
Northumbria	mm	580		927		2851		4067	
	% LTA	108	2-5	109	2-5	97	2-5	94	5-10
Severn-Trent	mm	459		777		2424		3613	
	% LTA	96	2-5	103	2-5	93	2-5	94	5
Yorkshire	mm	516		861		2574		3800	
	% LTA	100	<2	105	2-5	91	5-10	91	10-20
Anglian	mm	379		662		1899		2756	
	% LTA	99	2-5	111	2-5	91	5-10	91	10-20
Thames	mm	406		747		2150		3210	
	% LTA	94	2-5	108	2-5	90	5-10	92	5-10
Southern	mm	431		804		2377		3528	
	% LTA	93	2-5	103	2-5	89	5-10	89	10-20
Wessex	mm	487		862		2562		3939	
	% LTA	95	2-5	103	2-5	89	5-10	93	5-10
South West	mm	749		1276		3708		5713	
	% LTA	107	2-5	109	2-5	93	2-5	96	2-5
Welsh	mm	769		1344		4221		6478	
	% LTA	100	<2	102	2-5	94	2-5	97	2-5
Scotland	mm	1024		1695		5602		8382	
	% LTA	122	20-30	118	15-25	114	40-60	115	>200
RIVER PURIFICATION BOARDS									
Highland	mm	1110		1998		6900		10436	
	% LTA	112	5	114	5-10	116	40-70	117	>>200
North-East	mm	647		1035		3357		4808	
	% LTA	108	2-5	106	2-5	100	<2	97	2-5
Tay	mm	981		1487		4609		6973	
	% LTA	133	30-60	121	10-20	110	5-10	112	20-35
Forth	mm	838		1307		4171		6208	
	% LTA	127	20-35	118	10-20	110	5-10	110	20-35
Tweed	mm	653		1065		3476		4997	
	% LTA	109	2-5	110	2-5	104	2-5	101	2-5
Solway	mm	865		1472		5039		7618	
	% LTA	104	2-5	104	2-5	104	2-5	106	5-10
Clyde	mm	1085		1843		6653		10023	
	% LTA	112	5	109	2-5	116	30-60	116	>200

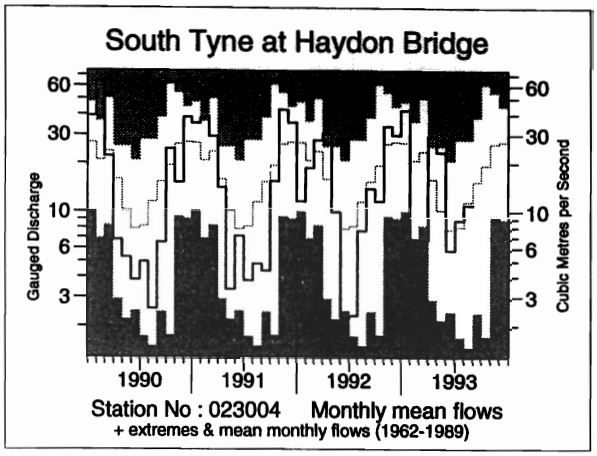
LTA refers to the period 1961-90.

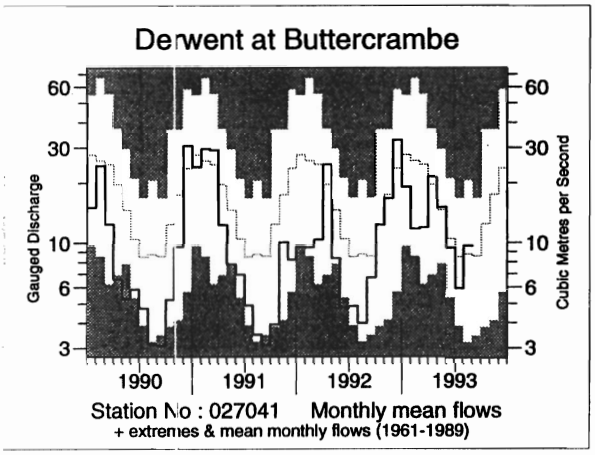
Return period assessments are based on tables provided by the Meteorological Office*. The tables reflect rainfall totals over the period 1911-70 only and the estimate assumes a sensibly stable climate. They assume a start in a specified month; return periods for a start in any month may be expected to be an order of magnitude less - for the longest durations the return period estimates converge. "Wet" return periods underlined.

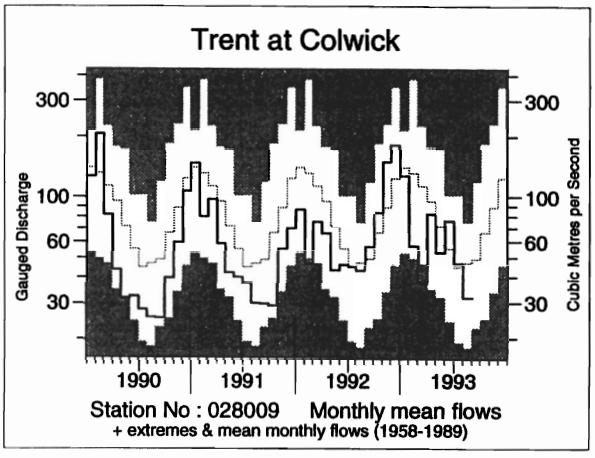
* Tabony, R.C., 1977, The Variability of long duration rainfall over Great Britain, Scientific Paper No. 37, Meteorological Office.

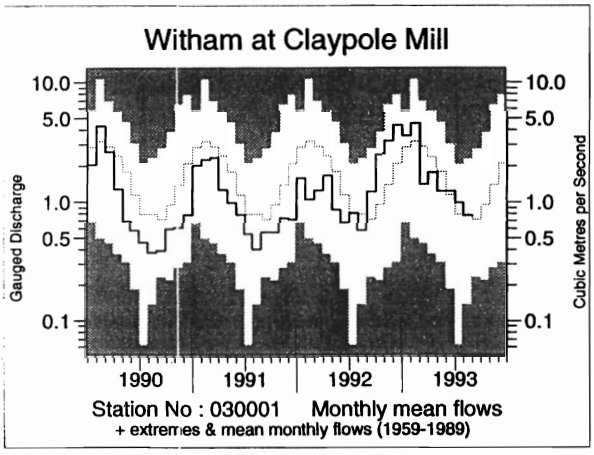
FIGURE 1 MONTHLY RIVER FLOW HYDROGRAPHS

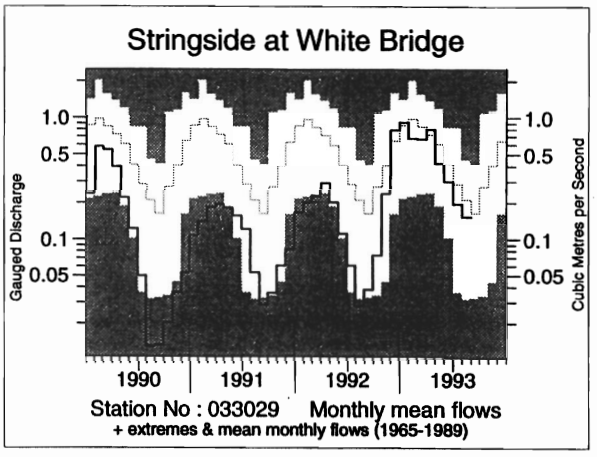


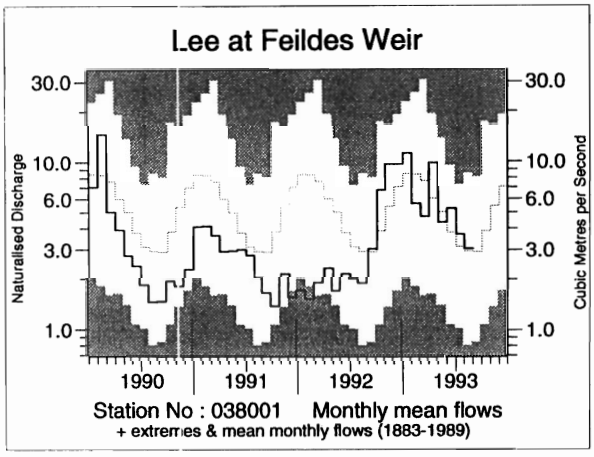


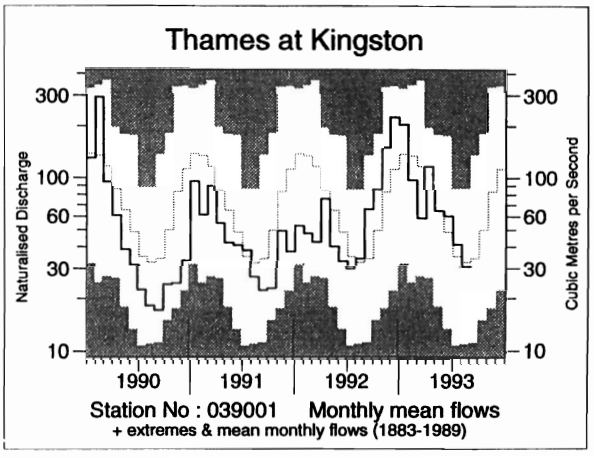


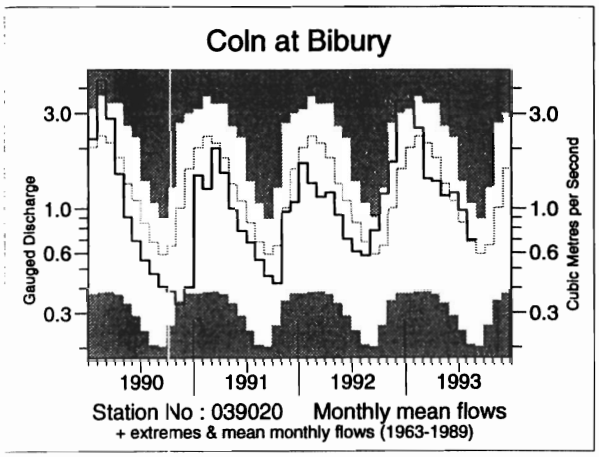


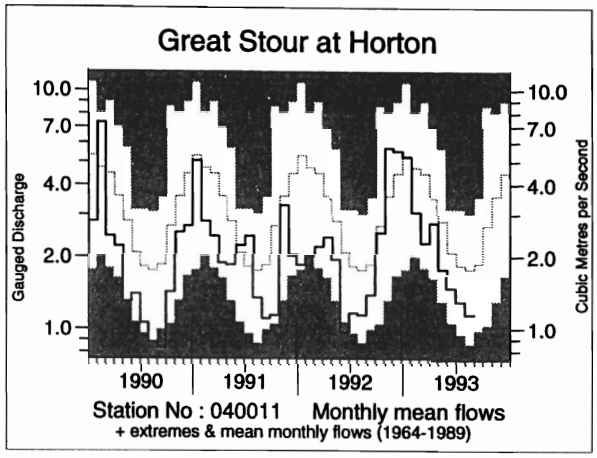


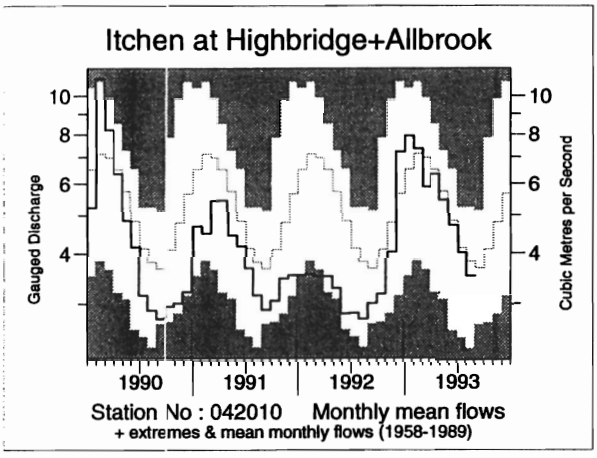


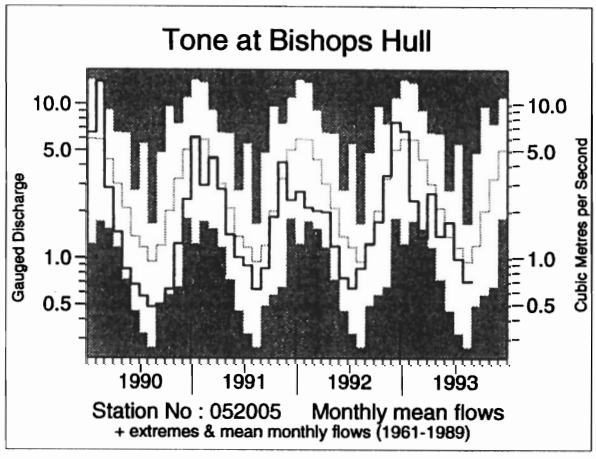


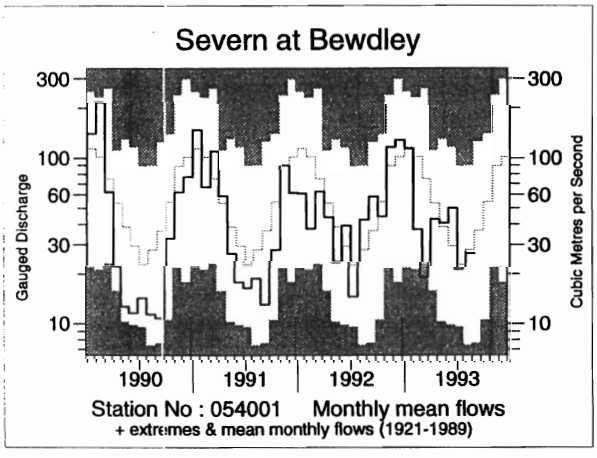


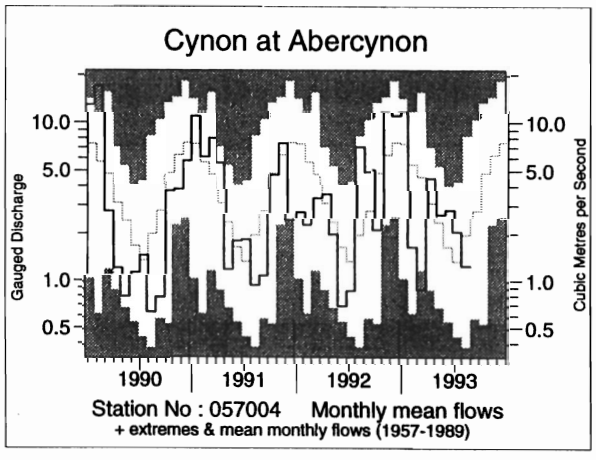

Coln at Bibury
Gauged Discharge
Cubic Metres per Second
3.0
1.0
0.6
0.3
1990
1991
1992
1993
Station No : 039020 Monthly mean flows
+ extremes & mean monthly flows (1963-1989)

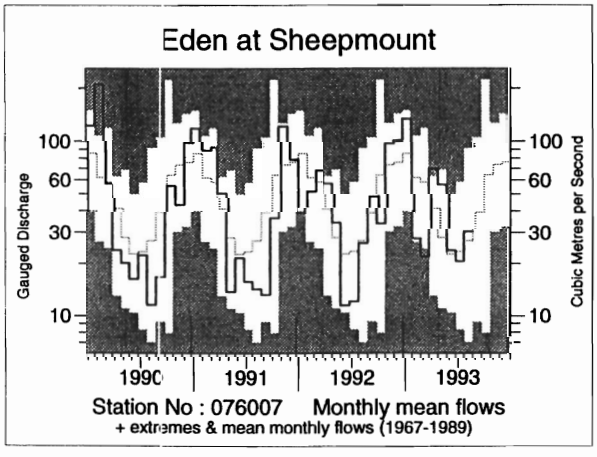

Great Stour at Horton
Gauged Discharge
Cubic Metres per Second
10.0
7.0
4.0
2.0
1.0
1990
1991
1992
1993
Station No : 040011 Monthly mean flows
+ extremes & mean monthly flows (1964-1989)


Itchen at Highbridge+Allbrook
Gauged Discharge
Cubic Metres per Second
10
8
6
4
1990
1991
1992
1993
Station No : 042010 Monthly mean flows
+ extremes & mean monthly flows (1958-1989)


Tone at Bishops Hull
Gauged Discharge
Cubic Metres per Second
10.0
5.0
1.0
0.5
1990
1991
1992
1993
Station No : 052005 Monthly mean flows
+ extremes & mean monthly flows (1961-1989)


Severn at Bewdley
Gauged Discharge
Cubic Metres per Second
300
100
60
30
10
1990
1991
1992
1993
Station No : 054001 Monthly mean flows
+ extremes & mean monthly flows (1921-1989)


Cynon at Abercynon
Gauged Discharge
Cubic Metres per Second
10.0
5.0
1.0
0.5
1990
1991
1992
1993
Station No : 057004 Monthly mean flows
+ extremes & mean monthly flows (1957-1989)


Eden at Sheepmount
Gauged Discharge
Cubic Metres per Second
100
60
30
10
1990
1991
1992
1993
Station No : 076007 Monthly mean flows
+ extremes & mean monthly flows (1967-1989)

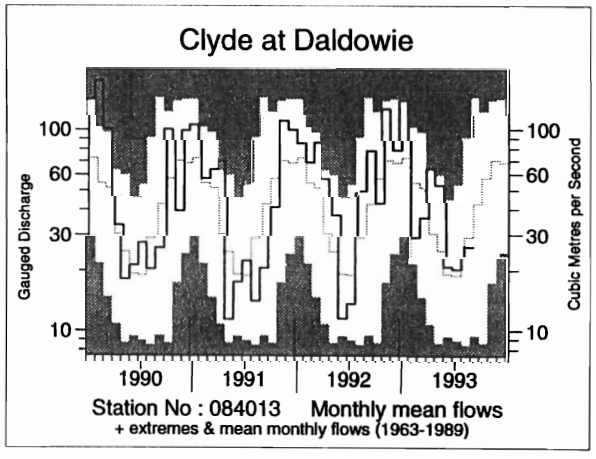

Clyde at Daldowie
Gauged Discharge
Cubic Metres per Second
100
60
30
10
1990
1991
1992
1993
Station No : 084013 Monthly mean flows
+ extremes & mean monthly flows (1963-1989)

TABLE 3 RUNOFF AS MM. AND AS A PERCENTAGE OF THE PERIOD OF RECORD AVERAGE WITH SELECTED PERIODS RANKED IN THE RECORD

River/ Station name	Apr 1993	May	Jun	Jul	Aug 1993		6/93 to 8/93		1/93 to 8/93		5/90 to 8/93		11/88 to 8/93	
	mm %LT	mm %LT	mm %LT	mm %LT	mm %LT	rank /yrs	mm %LT	rank /yrs	mm %LT	rank /yrs	mm %LT	rank /yrs	mm %LT	rank /yrs
Dee at	97	87	33	23	24	12	80	11	559	16	2342	6	3376	2
Park	124	142	90	82	75	/21	83	/21	113	/21	92	/18	87	/17
Tay at	168	80	50	34	40	17	124	17	907	40	3976	30	63821	36
Ballathie	196	116	112	85	77	/41	91	/41	133	/41	110	/38	17	/37
Whiteadder Water at	50	63	22	11	8	12	41	15	241	9	1175	8	1520	5
Hutton Castle	131	241	132	88	53	/24	92	/24	91	/24	94	/21	78	/20
South Tyne at	101	84	20	32	39	19	91	20	475	19	2354	10	3465	5
Haydon Bridge	182	241	76	116	101	/30	100	/30	108	/30	96	/24	93	/22
Wharfe at	60	63	27	27	42	24	96	23	397	13	2002	7	3036	2
Flint Mill Weir	110	169	110	103	106	/38	106	/38	92	/38	87	/35	87	/34
Derwent at	35	25	15	10	16	21	42	12	173	8	763	3	1066	1
Buttercrambe	112	107	91	72	115	/32	95	/32	78	/32	73	/29	66	/28
Trent at	29	19	27	17	12	7	55	21	180	3	883	3	1378	2
Colwick	91	77	144	107	73	/35	108	/35	76	/35	78	/32	79	/31
Lud at	19	17	16	11	9	8	36	8	137	8	413	2	648	1
Louth	62	66	83	71	69	/26	76	/25	70	/25	51	/22	52	/21
Witham at	15	11	11	9	7	22	27	23	135	18	466	8	694	5
Claypole Mill	73	72	115	129	103	/35	113	/35	99	/34	80	/32	77	/30
Little Ouse at	14	10	8	6	6	9	19	8	99	7	324	2	536	1
Abbey Heath	79	70	77	74	81	/26	75	/26	81	/25	60	/23	66	/21
Colne at	11	6	6	3	3	8	12	15	74	8	290	3	487	1
Lexden	85	70	113	72	75	/34	87	/34	80	/34	69	/31	74	/30
Lee at	25	11	13	10	8	71	31	81	121	66	357	9	589	10
Feildes Weir (natr.)	168	86	138	124	106	/108	122	/108	107	/107	68	/102	74	/99
Thames at	31	17	16	11	8	56	35	76	178	59	624	20	987	13
Kingston (natr.)	138	98	127	116	91	/111	114	/111	104	/111	80	/108	82	/106
Coln at	34	29	30	25	17	17	72	19	316	16	1099	8	1670	4
Bibury	80	89	115	121	102	/30	113	/30	107	/30	86	/27	86	/26
Great Stour at	21	14	11	10	9	7	31	6	145	6	671	3	981	1
Horton	82	67	72	71	68	/29	72	/28	75	/27	72	/22	69	/18
Itchen at	46	41	34	30	26	13	90	17	329	17	1198	2	1799	1
Highbridge+Allbrook	100	98	100	100	94	/35	98	/35	101	/35	80	/32	80	/31
Piddle at	38	29	23	18	15	16	57	14	299	16	1076	6	1640	3
Baggs Mill	90	92	100	101	97	/30	101	/30	102	/29	83	/24	82	/21
Exe at	51	26	36	26	22	17	84	28	433	8	2263	7	3447	2
Thorverton	91	70	154	125	78	/38	116	/38	90	/37	88	/35	86	/33
Kenwyn at	31	50	81	35	21	24	137	25	404	15	1745	5	2770	2
Truro	70	186	447	281	174	/25	295	/25	101	/25	91	/22	91	/21
Tone at	34	19	22	13	9	9	45	18	233	5	1067	1	1813	1
Bishops Hull	89	71	128	86	74	/33	100	/33	74	/32	72	/30	77	/28
Severn at	26	25	30	13	16	45	60	59	214	10	1164	9	1863	4
Bewdley	82	107	172	93	93	/73	122	/73	77	/72	82	/70	85	/68
Cynon at	114	67	69	53	32	15	154	27	695	13	3770	14	5970	14
Abercynon	148	115	173	155	61	/35	121	/35	98	/35	95	/29	99	/27
Eden at	79	66	27	24	36	18	87	15	445	16	2207	9	3386	7
Sheepmount	168	205	109	91	120	/23	107	/23	109	/23	102	/17	102	/14
Clyde at	89	76	29	29	37	18	94	17	545	27	2939	26	4404	26
Daldowie	199	218	111	107	91	/30	100	/30	124	/30	120	/27	119	/26
Carron at	94	61	85	229	131	6	446	13	1602	12	8880	9	14051	10
New Kelso	67	61	117	198	76	/15	122	/15	113	/15	108	/12	113	/10

Notes:

(i) Values based on gauged flow data unless flagged (natr.), when naturalised data have been used.

(ii) Values are ranked so that lowest runoff as rank 1.

(iii) %LT means percentage of long term average from the start of the record to 1992. For the long periods (at the right of this table), the end date for the long term is 1993.

TABLE 4 START-MONTH RESERVOIR STORAGES UP TO SEPTEMBER 1993

Area	Reservoir (R)/ Group (G)		Capacity• (Ml)	1993 Apr	May	June	July	Aug	Sep	1992 Sep
North West	Northern Command Zone[1]	(G)	133375	77	91	92	77	66	58	60
	Vyrnwy	(R)	55146	78	87	94	89	81	79	96
Northumbria	Teesdale[2]	(G)	87936	83	95	96	80	72	66	63
	Kielder	(R)	199175*	81*	91*	96*	91*	90*	87*	84*
Severn-Trent	Clywedog	(R)	44922	87	95	100	96	94	92	87
	Derwent Valley[3]	(G)	39525	73	81	72	76	77	76	66
Yorkshire	Washburn[4]	(G)	22035	83	91	94	81	72	63	64
	Bradford supply[5]	(G)	41407	76	83	91	80	74	74	56
Anglian	Grafham	(R)	58707	92	93	95	95	96	95	94
	Rutland	(R)	130061	88	94	93	96	93	90	86
Thames	London[6]	(G)	206232	91	95	96	94	96	87	89
	Farmoor [7]	(G)	13843	95	99	98	98	98	98	99
Southern	Bewl	(R)	28170	91	97	96	91	85	78	60
	Ardingly	(R)	4685	100	100	100	99	90	80	71
Wessex	Clatworthy	(R)	5364*	83	86	86	91	82	72	35*
	Bristol WW [8]	(G)	38666*	85*	89*	84*	76*	67*	60	58*
South West	Colliford	(R)	28540	83	83	84	87	86	81	63
	Roadford	(R)	34500	80	78	78	82	81	74	70
	Wimbleball[9]	(R)	21320	91	92	89	89	83	76	48
	Stithians	(R)	5205	88	83	91	99	91	85	53
Welsh	Celyn + Brenig	(G)	131155	90	95	99	100	98	94	89
	Brianne	(R)	62140	90	99	100	98	97	92	90
	Big Five[10]	(G)	69762	78	89	92	89	86	78	83
	Elan Valley[11]	(G)	99106	89	98	100	97	96	97	100
Lothian	Edinburgh/Mid Lothian	(G)	97639	93	99	99	96	89	83	86
	West Lothian	(G)	5613	92	100	99	99	89	81	60
	East Lothian	(G)	10206	97	100	100	99	92	81	68

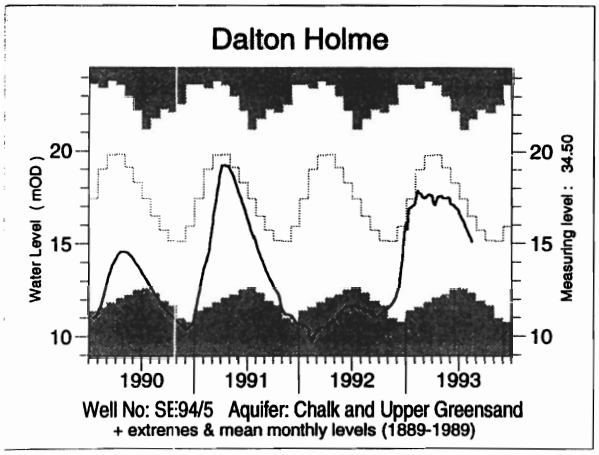
• Live or usable capacity (unless indicated otherwise)

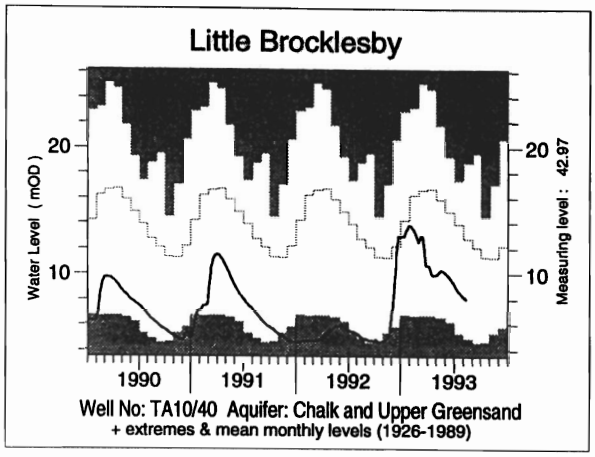
* Gross storage/percentage of gross storage

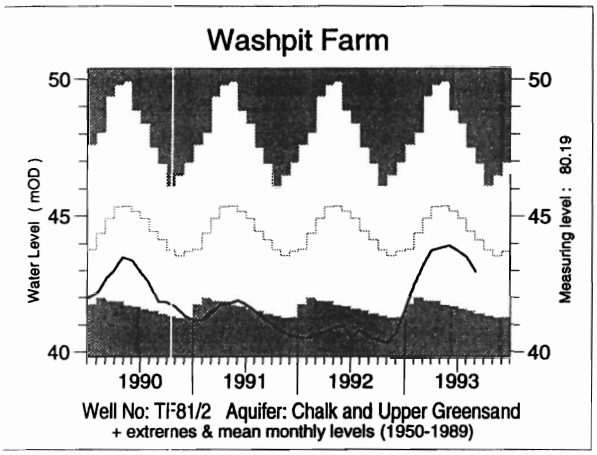
1. Includes Haweswater, Thirlmere, Stocks and Barnacre.
2. Cow Green, Selset, Grassholme, Balderhead, Blackton and Hury.
3. Howden, Derwent and Ladybower.
4. Swinsty, Fewston, Thruscross and Eccup.
5. The Nidd/Barden group (Scar House, Angram, Upper Barden, Lower Barden and Chelker) plus Grimwith.
6. Lower Thames (includes Queen Mother, Wraysbury, Queen Mary, King George VI and Queen Elizabeth II) and Lee Valley (includes King George and William Girling) groups - pumped storages.
7. Farmoor 1 and 2 - pumped storages.
8. Blagdon, Chew Valley and others.
9. Shared between South West (river regulation for abstraction) and Wessex (direct supply).
10. Usk, Talybont, Llandegfedd (pumped storage), Taf Fechan, Taf Fawr.
11. Claerwen, Caban Coch, Pen y Garreg and Craig Goch.

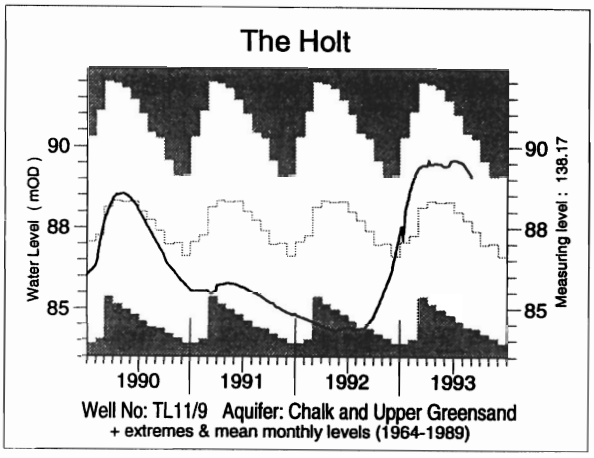
Note: Variations in storage depend on the balance between inputs (from catchment rainfall and any pumping) and outputs (to supply, compensation flow, HEP, amenity). There will be additional losses due to evaporation, especially in the summer months. Operational strategies for making the most efficient use of water stocks will further affect reservoir storages. Table 4 provides a link between the hydrological conditions described elsewhere in the report and the water resources situation.

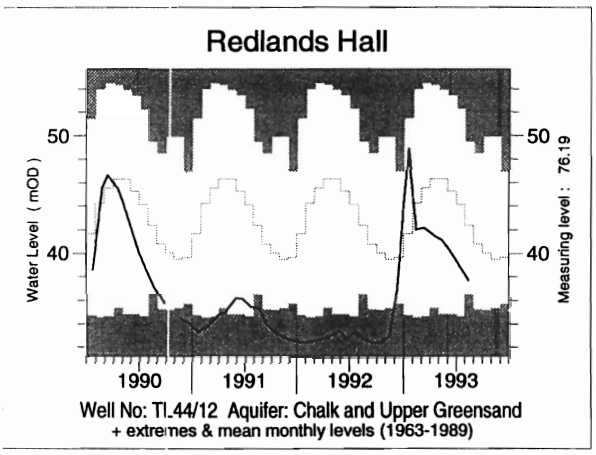
FIGURE 2 GROUNDWATER LEVEL HYDROGRAPHS

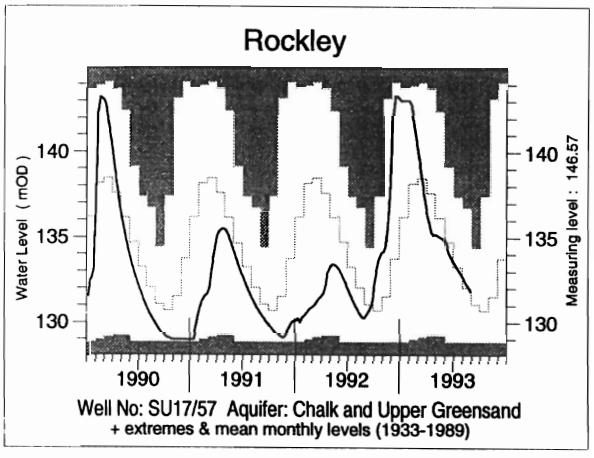


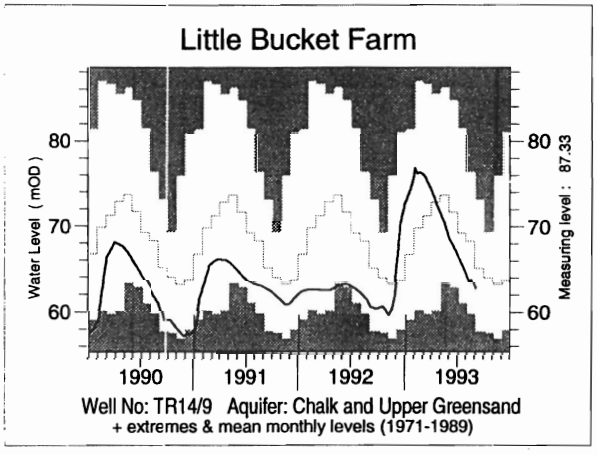


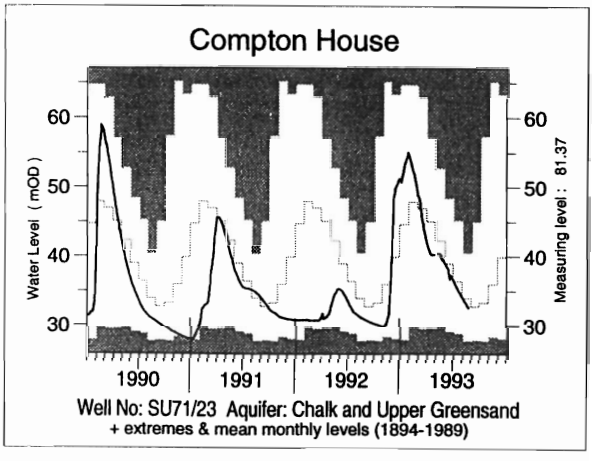


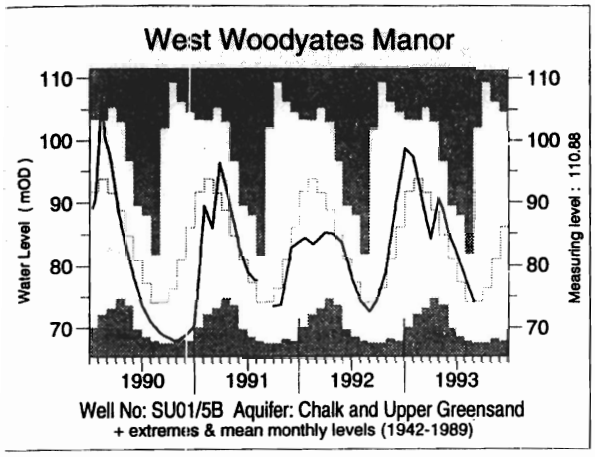


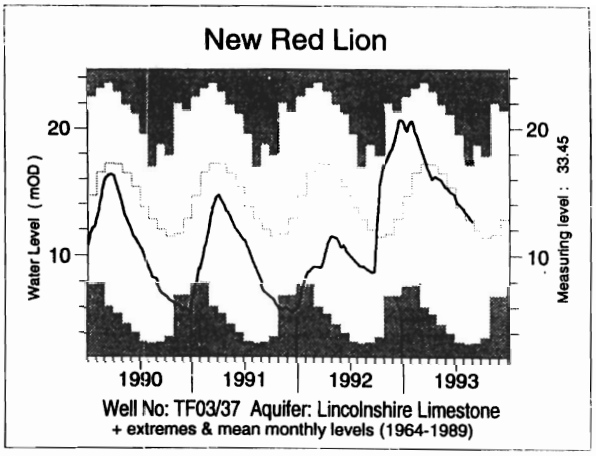


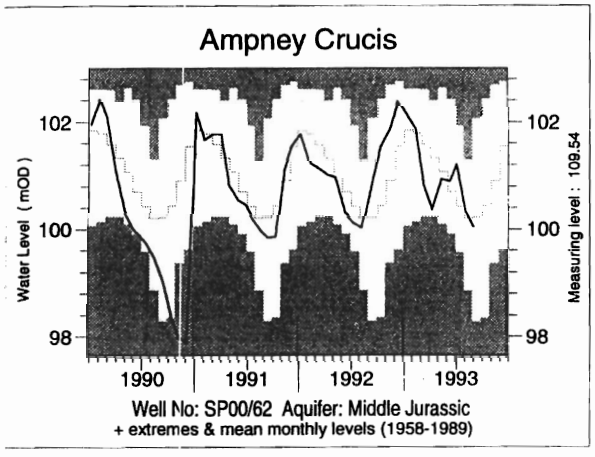


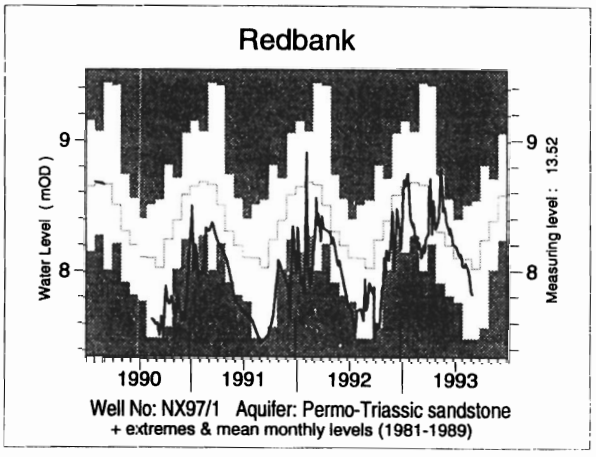


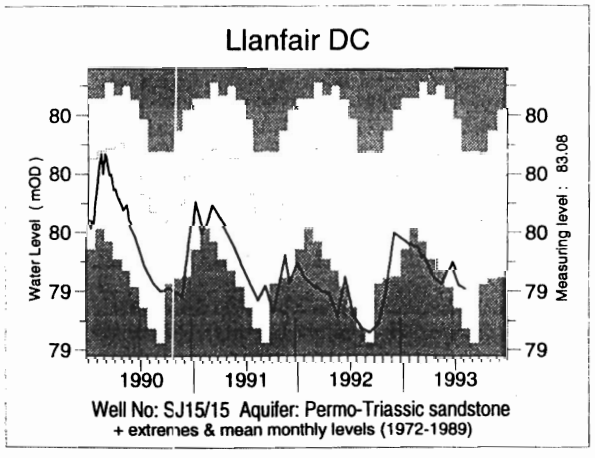


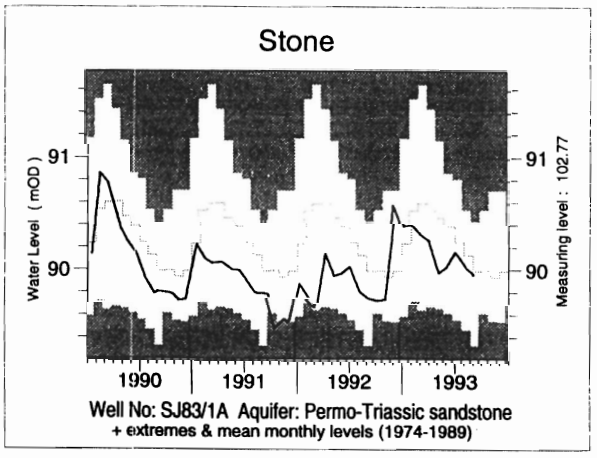

West Woodyates Manor
Water Level (mOD)
Measuring level : 110.88
1990
1991
1992
1993
Well No: SU01/5B Aquifer: Chalk and Upper Greensand
+ extremes & mean monthly levels (1942-1989)

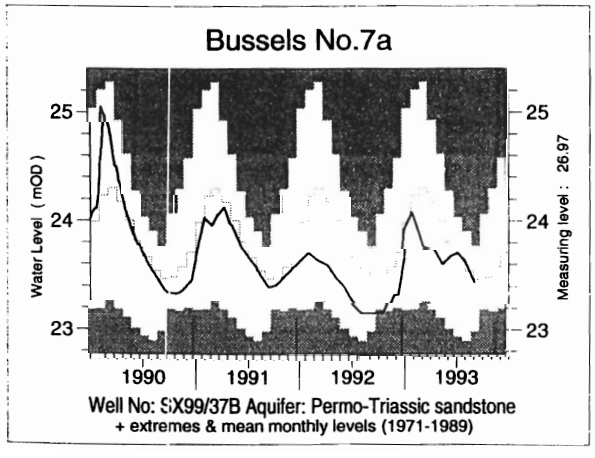

New Red Lion
Water Level (mOD)
Measuring level : 33.45
1990
1991
1992
1993
Well No: TF03/37 Aquifer: Lincolnshire Limestone
+ extremes & mean monthly levels (1964-1989)


Ampney Crucis
Water Level (mOD)
Measuring level : 109.54
1990
1991
1992
1993
Well No: SP00/62 Aquifer: Middle Jurassic
+ extremes & mean monthly levels (1958-1989)


Redbank
Water Level (mOD)
Measuring level : 13.52
1990
1991
1992
1993
Well No: NX97/1 Aquifer: Permo-Triassic sandstone
+ extremes & mean monthly levels (1981-1989)


Llanfair DC
Water Level (mOD)
Measuring level : 83.08
1990
1991
1992
1993
Well No: SJ15/15 Aquifer: Permo-Triassic sandstone
+ extremes & mean monthly levels (1972-1989)


Stone
Water Level (mOD)
Measuring level : 102.77
1990
1991
1992
1993
Well No: SJ83/1A Aquifer: Permo-Triassic sandstone
+ extremes & mean monthly levels (1974-1989)


Bussels No.7a
Water Level (mOD)
Measuring level : 26.97
1990
1991
1992
1993
Well No: SX99/37B Aquifer: Permo-Triassic sandstone
+ extremes & mean monthly levels (1971-1989)

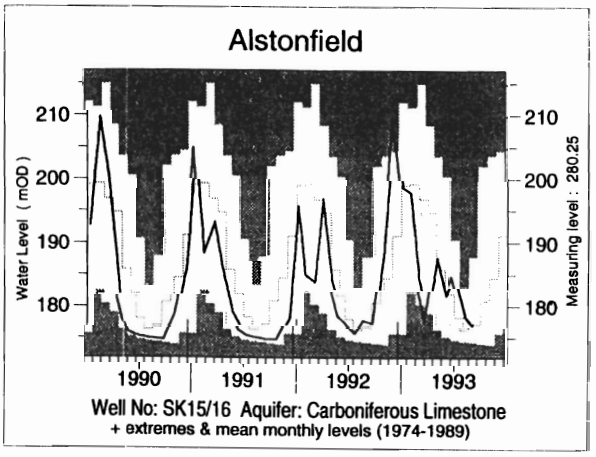

Alstonfield
Water Level (mOD)
Measuring level : 280.25
1990
1991
1992
1993
Well No: SK15/16 Aquifer: Carboniferous Limestone
+ extremes & mean monthly levels (1974-1989)

TABLE 5 A COMPARISON OF AUGUST GROUNDWATER LEVELS: 1992 AND 1993

Site	Aquifer	Records commence	Average August level	August 1992		Aug/Sept 1993		No of years Aug level <1993	Lowest pre-1993 level
				day	level	day	level		any month
Wetwang	C & UGS	1971	20.04	31/08	18.27	15/08	19.85	>10	16.66
Dalton Holme	C & UGS	1889	16.46	28/08	11.38	15/08	15.09	>10	9.64
Little Brocklesby	C & UGS	1926	12.19	25/08	4.86	02/08	8.19	6	4.53
Washpit Farm	C & UGS	1950	44.38	03/08	40.77	01/09	42.96	9	40.30
The Holt	C & UGS	1964	87.55	03/08	84.32	30/08	89.08	>10	83.90
Therfield Rectory	C & UGS	1883	80.70	04/08	dry	30/08	78.24	>10	dry <71.6
Redlands Hall	C & UGS	1964	41.40	14/08	32.73	13/08	37.69	6	32.29
Rockley	C & UGS	1933	131.94	23/08	130.31	30/08	131.82	>10	dry <128.9
Little Bucket Farm	C & UGS	1971	66.80	24/08	61.28	31/08	62.72	4	56.77
Compton House	C & UGS	1894	34.24	20/08	31.20	24/08	32.62	>10	27.64
Chilgrove House	C & UGS	1836	42.41	20/08	38.49	24/08	40.73	>10	33.46
West Dean No 3	C & UGS	1940	1.45	28/08	1.44	27/08	1.43	>10	1.01
Lime Kiln Way	C & UGS	1969	125.13	11/08	123.86	11/08	124.11	1	123.70
Ashton Farm	C & UGS	1974	65.80	03/08	65.50	31/08	65.36	7	63.10
West Woodyates	C & UGS	1942	73.98	03/08	74.40	31/08	74.15	>10	67.62
New Red Lion	LLst	1964	12.35	24/08	9.06	26/08	12.69	>10	3.29
Ampney Crucis	Mid Jur	1958	100.26	10/08	100.04	30/08	100.05	>10	97.38
Yew Tree Farm	PTS	1973	13.40	27/08	13.18	10/08	13.47	>10	8.43
Llanfair DC	PTS	1972	79.67	19/08	78.95	13/08	79.22	3	78.85
Morris Dancers	PTS	1969	32.51	11/08	31.93	10/08	31.91	1	30.87
Stone	PTS	1974	90.15	06/08	89.81	01/09	89.94	5	89.34
Skirwith	PTS	1978	130.16	31/08	129.66	20/08	130.11	5	129.44
Redbank	PTS	1981	7.99	31/08	7.95	29/08	7.86	5	7.45
Bussels 7A	PTS	1972	23.54	13/08	23.15	01/09	23.44	7	22.90
Rushyford NE	MgLst	1967	71.94	31/08	74.59	04/08	75.58	>10	64.77
Peggy Ellerton	MgLst	1968	34.42	11/08	31.38	05/08	31.61	2	31.10
Alstonfield	CLst	1974	177.30	05/08	175.95	02/09	177.27	>10	174.22

groundwater levels are in metres above Ordnance Datum

C & UGS	Chalk and Upper Greensand	Mid Jur	Middle Jurassic limestones
LLst	Lincolnshire Limestone	MgLst	Magnesian Limestone
PTS	Permo-Triassic sandstones	CLst	Carboniferous Limestone

FIGURE 3 LOCATION MAP OF GAUGING STATIONS AND GROUNDWATER INDEX WELLS